

What is claimed is:

- 1        1. A high voltage semiconductor device, comprising:  
2              a high concentration collector area of a first conductive type;  
3              a low concentration collector area of a first conductive type formed on the  
4              high concentration collector area;  
5              a base area of a second conductive type formed on the low concentration  
6              collector area and having a trench which penetrates the low concentration collector  
7              area in a vertical direction at the edge of the trench;  
8              a high concentration emitter area of a first conductive type formed on a  
9              predetermined upper surface of the base area; and  
10             an emitter electrode, a base electrode, and a collector electrode isolated from  
11             one another and connected to the emitter area, the base area, and the collector  
12             area, respectively.
- 13             2. The high voltage semiconductor device of claim 1, wherein the width of  
14             the trench is 1/10 times the depth of the trench.
- 15             3. The high voltage semiconductor device of claim 1, further comprising  
16             an oxide layer which fills the trench.
- 17             4. A method of fabricating a high voltage semiconductor device,  
18             comprising:  
19              preparing a semiconductor substrate having a high concentration collector  
20              area and a low concentration collector area of a first conductive type;  
21              forming a base area of a second conductive type on the low concentration  
22              collector area;  
23              forming a high concentration emitter area of a first conductive type on a  
24              predetermined upper portion of the base area;  
25              forming a trench penetrating the base area and the low concentration  
26              collector area at the edge of the base area, spaced apart from the emitter area; and

11 forming an emitter electrode, a base electrode, and a collector electrode  
12 connected to the emitter area, the base area, and a semiconductor substrate,  
13 respectively.

1 5. The method of claim 4, wherein the trench is formed using a reactive  
2 ion etching method.

1 6. The method of claim 5, wherein the reactive ion etching is performed  
2 using Cl<sub>2</sub> or SF<sub>6</sub> as a reaction gas.

1 7. The method of claim 4, wherein the width of the trench is 1/10 times  
2 the depth of the trench.